Stray Creek-WEPP Road Procedure and Inputs

WEPP Road Website: https://forest.moscowfsl.wsu.edu/fswepp/
Interface: WEPP Road Batch

Parameters Needed
1. Road Design- inslope or outslope with coverage bare vs. veg, rutted or unrutted
2. Road Surface-Native, Gravel, Paved
3. Traffic Level- H, L, None
4. Road Gradient- %
5. Road Segment Length- maximum 200' segments
6. Road Width-
7. Fill Gradient-%
8. Fill Length-
9. Buffer Gradient-%
10. Buffer Length-ft
11. Rock Fragment- %
12. Climate (choose Station and refine by WEPP enable Prism interface by Lat/Long)
13. Soil Texture
14. Years to Simulate (choose 50 yrs)

Parameter Rules and Data Sources for Stray Creek

1. **Road Design**: Set up a general rule for Stray Creek based on field knowledge of Lolo area Roads based on Maintenance Level
   a. 1-Basic (closed or open) = Outslope Rutted, vegetated for existing condition
   b. 2-High Clearance= Outslope Rutted for Existing, Outslope Unrutted for Project Use
   c. 3 and above- Inslope with Ditch-unvegetated

   Data sources for knowing the Maintenance Level of a road originate with the attributes in the FS INFRA Layer which is housed in the Forest's reference files on the t drive (T:\FS\Reference\GIS\r01_nezclw\LayerFile\Transportation). Margaret already worked with this reference layer to create relevant Stray Creek roads layers, these are in the GIS Project folder. The 2 relevant road layers for road design and road surface are the "Road (Objective)", and "SoilSlopeBreaksRoadMtc".

   **I discovered after starting that not all the roads in the project area were included in the early runs. I edited the INFRA layer to create two other layers, "OtherProjectRoads" and then I realized I clipped out a portion of Rd 519, Fan Creek, and created a shapefile just for it.*

2. **Road Surface**: This information is in the attribute tables for the INFRA Layer in a column labeled as "Surface_Type". The two Stray Creek road layers with this information are the same as above.

3. **Traffic Level**: This variable we will vary for the Existing Run and Project Run. The traffic level will be set by a rule based on the Maintenance Level and proposed Project Activity. Increasing traffic is a key control for how we can use WEPP to highlight potential project impacts. Traffic increases can also be used as a surrogate for the potential increases in impact caused by reconditioning a road, even if the traffic level before the project and during the project are not very different.

Road Mtce Level (from Rd Layer)	Used in Project Y or N/Described Use (if N, then Existing and Project are the same)	Existing Traffic	Project Traffic
Level 1-2	Y-Recondition	N	L
Level 2->5	Y-Recondition	L	H
Any	Y-Haul Route	L	H
Temp road	Y-Construct	N	L

4. **Road Gradient**: Assume 3%. In general, all roads are built on contour for Stray Creek and fairly flat, while field data may show variations for some segments, 3% is a good average based on what I have seen in the field.

5. **Road Segment Length:** Divide Roads up into 200' segments if all characteristics are the same for each road segment (usually) except the fill parameters and buffer parameters. For each road, if there are multiple 200' segments that have identical characteristics only run one and multiply the results for a total. Do this for each road segment with the same characteristics. Generally, where there is a road stream crossing, I run a short segment and reduce the buffer, unless it is a bridge.

6. **Road Width**: Unfortunately, this attribute (called Travel Way) has been clipped out of our available road reference layers. I tried to hunt for an intact INFRA layer that was fully attributed but could not find one. As an aside, this is SUPER frustrating when you find that the reference GIS layers have moved or our gone, but it happens a lot. We fixed this issue on the Nez side of the Forest because we need an intact INFRA layer to run NEZSED and hid that layer in the Watershed Program files for Nezsed, but we didn't do the same for the Clearwater side. We will have to make assumptions here again about width based on Road Mtc Level.

Road Mtce Level	Road Width for WEPP (ft)
Level 1-2	18
Level 2+	25
Temp road	20

7. **Fill Length:** Again assumption on road design/maintenance level and some judgement based on my time in the field there.

Road Mtce Level	Fill Length for WEPP (ft)
Level 1-2	18
Level 2+	24
Temp road	20

8. **Fill Gradient (%):** Pull this data from the "Soil SlopeBreaksRdMtc" layer. These are categorized. The Fill Gradient is always steeper than the natural sideslope so use the upper end of the slope break category.

Slope Break (in GIS layer)	Fill Gradient %
0-35%	35%
35-40%	40%
40-60%	60%

9. **Buffer Gradient (%):** Use the same logic as above, but assume the buffer is at the lower end of the slope category.

Slope Break (in GIS layer)	Buffer Gradient %
0-35%	10% (0 is not realistic in Stray Creek)
35-40%	35%
40-60%	40%

10. **Buffer Length**: It is easiest to measure directly in GIS using the measuring tool.

11. **Rock Fragment:** Assume 15% for Stray Creek (field judgement and average)

12. **Climate:** Will automatically adjust when you enter a custom climate with a lat long from the center of the project that you pull from GIS layer. For Stray Creek I picked:
Lat: 46° 13'13.443N, Long: 115°44'49.68W

13. **Soil Texture:** Based on field collected data, Sandy Loam…assume this is for all.

Stray Creek Road Population and Characteristics

The populated WEPP Input spreadsheet is in Excel. The table below summarizes what roads are input.

Road #	Proposed Work	Haul (Y/N)	Live H2OXing	Other notes
454	Recondition	Y	1	
454-A	Recondition	Y	5	
495	Recondition	Y	2	
5104	Recondition	Y	2	
5104-A	Recondition		0	
514-N	Recondition		0	
519	Recondition	Y	3	Used in LID
461	Recondition		0	
495-A	Recondition		0	
514-N	Recondition		0	
514	Recondition	Y	5	Used in LID
temp37	New		0	
temp38	Existing template		0	
temp39	New		0	
temp40	New		0	
temp41	Existing template		0	
temp42	Existing template		0	